



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/628,292 | 07/28/2003 | Peter Soliz | 32082-1003 | 3480 |
| 5179 | 7590 | 09/08/2006 | EXAMINER | |
| PEACOCK MYERS, P.C. 201 THIRD STREET, N.W. SUITE 1340 ALBUQUERQUE, NM 87102 | | | SANDERS JR, JOHN R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3735 | |

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/628,292 | | SOLIZ ET AL. | |
| | Examiner | | Art Unit | |
| | John R. Sanders | | 3735 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11, 17-20 and 22-26 is/are allowed.
- 6) ☒ Claim(s) 12-16 and 27-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 21 is objected to because of the following informalities: Claim 21 does not appear in the application. For purposes of examination, claim 21 is hereby considered to be a cancelled claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 12-13 and 27-28 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,478,424 B1 to Grinvald et al (“Grinvald”).
4. Grinvald discloses a method for detecting functional areas in retinal images (see abstract) comprising recording a pre-stimulation image of the retina in a non-stimulating wavelength region, illuminating the retina using a stimulating wavelength using a variable illumination

Art Unit: 3735

pattern (col. 2, line 66 - col. 3, line 26; col. 3, lines 57-59); illuminating the retina at a non-stimulating wavelength; recording the reflectance of the of the retina in the non-stimulating wavelength region to form a post-stimulation image (col. 5, line 23 - col. 7, line 15) and determining functional areas of the retina based upon reflectance differences between the pre-stimulation image and the post-stimulation image (col. 7, lines 16-37). Grinvald discloses acquiring multiple recordings using this method (col. 7, lines 4-15). Grinvald discloses that the reflectance profile is indicative of blood oxygenation (col. 1, lines 52-63).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14-16 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grinvald in view of the articles to Stetter et al (hereinafter "Stetter") entitled "*Blind signal separation from optical imaging recordings with extended spatial decorrelation*" (IEEE Transactions on Biomedical Engineering) and "*Principle component analysis and blind separation of sources for optical imaging of intrinsic signals*" (Neuroimage).

7. Grinvald discloses the above limitations but does not expressly disclose using principal component analysis, independent component analysis, and/or extended spatial decorrelation for performing analysis of the functional signal obtained from the retina. However, from the Stetter references (as well as other references cited in the Information Disclosure Statements provided

Art Unit: 3735

by Applicant) it is clear that such statistical analysis tools were known at the time of the invention and were being applied to retinal images for recovery of functional signals from said images. Therefore, one of ordinary skill in the art would have found it obvious, in view of these references, to apply these known statistical analysis tools to retinal images obtained via the method disclosed by Grinvald in order to extract pertinent signal information from said signals.

Allowable Subject Matter

8. Claims 1-11, 17-20 and 22-26 allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art is disclosed by Grinvald (U.S. Patent No. 6,478,424). Grinvald discloses the method for detecting functional areas in retinal images by obtaining images of stimulated and non-stimulated regions of the eye, as discussed above. However, Grinvald does not expressly disclose or render obvious a method by which a hemifield of the retina is illuminated by a stimulating wavelength and the entire retina is illuminated at a non-stimulating wavelength, and then the resultant reflectance of the stimulated hemifield and the non-stimulated hemifield of the retina are recorded simultaneously, whereby functional areas of the retina and/or hemoglobin saturation are determined from the reflectance differences in the respective hemifields.

10. Other prior art such as Maddess (U.S. Patent No. 5,912,723; U.S. Patent No. 6,315,414) and De Yoe (U.S. Patent No. 6,430,431) teach stimulating a hemifield of the retina using hemifield stimuli for determining retinal function. However, instead of determining retinal function through reflectance differences in retinal images, as in Grinvald, they measure either subjective patient response to the stimulus (as in Maddess) or neurological response through

Art Unit: 3735

functional MRI (as in De Yoe), neither of which require the limitations to stimulating and non-stimulating illumination wavelengths or imaging of the retina present in the instant allowed claims.

Conclusion

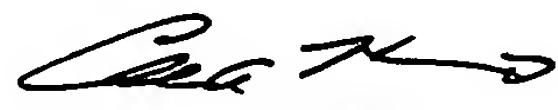
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John R. Sanders whose telephone number is (571) 272-4742. The examiner can normally be reached on M-F 10:00 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor II can be reached on (571) 272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jrs

2 September 2006


Charles A. Marmor, II
SPE, Art Unit 3735

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :4/14/04,5/18/04,10/15/04,12/08/05.